

What is claimed is:

1. A method for producing a fluid planar lipid layer-based membrane-anchored ligand system with defined ligand valency comprising:

5 a) contacting a solid surface with a lipid layer containing lipids conjugated to a first specific binding pair member;

 b) functionally linking a ligand to a second specific binding pair member which has binding affinity for said first binding pair member, said second member comprising at least one binding site for binding said first member; and

10 c) contacting the lipid layer of step a) with the linked ligand of step b) whereby contact of the lipid layer with said second binding pair member functionally linked to said ligand results in anchoring of the ligand to said lipid, thereby forming a fluid planar lipid layer-based membrane-anchored ligand system with defined ligand valency.

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2. The method of claim 1, wherein said ligand is functionally linked to said second binding pair member through binding interaction with said first binding pair member.

3. The method of claim 1 further comprising at least one cell comprising a receptor
20 having binding affinity for said at least one ligand.

4. The method of claim 1 further comprising a virus comprising a receptor having binding affinity for said at least one ligand.

25 5. A fluid planar lipid layer-based membrane-anchored ligand system produced by the method of claim 1.

6. The fluid planar lipid layer-based membrane-anchored ligand system of claim 4, wherein said at least one ligand is selected from the group consisting of I-EK-MCC
30 and I-AK-CA, neuropilin-1, LFA1, DC-SIGN, ICAM1, ICAM3, MHC, TCR, CD100, SEMA4A, CD40, CD40L, CD80, CD86, CD28, SEMA7A, CD72, TIM2, B7-H1/B7-DC, B7-1/B7-2, B7RP-1, B7H3, 4-1BBL, CD27L, OX40L, OX40, CD27, 4-1BB, ICOS, CTLA4, PD1, plexin-C1, CD4, CD8, CKR family members, CXCR4, CCR5, CCR3, gamma-cytokine receptor family members, IL2R, IL4R, IL7R, IL15R, SRA,

CD68, LOX1, HSP receptors, CD91, TLR4, TLR2, CD36, CD40, CD14, v3 integrin, and TNFR family members , TNFR, FAS, and FASL.

7. The method of claim 1, wherein said surface is selected from the group consisting
5 of a glass coverslip, a biacore chip, a sensor chip or a tissue culture plate.

8. The method of claim 1, wherein said first binding pair member is biotin and said
second binding pair member comprises a plurality of binding sites for said first
member and is selected from the group consisting of streptavidin or avidin.

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9. The method of claim 1, wherein said first binding pair member is nickel and said
second binding pair member is a histidine tag.

10. The method of claim 1, wherein said specific binding member pairs are selected
15 from the group consisting of nickel-histidine, biotin –streptavidin, antibody-antigen,
lectin-carbohydrate, and complementary oligonucleotides.

11. The method of claim 3, wherein said at least one cell is selected from the group
consisting of a T cell, an antigen presenting cell, a macrophage, a B cell, a neuron, a
20 fibroblast, an endothelial cell, an epithelial cell, a synoviocyte, a muscle cell, a stem
cell, and a dendritic cell.

12. The method of claim 4, wherein said virus is HIV.

25 13. The method of claim 1, wherein said lipids are selected from the group
consisting of POPC, DOPC, and derivatives thereof.

14. A kit for practicing the method of claim 1, comprising:

- a) lipids;
- 30 b) a solid surface;
- c) a plurality of first and second binding members; and
- d) optionally at least one ligand of interest.

15. The kit of claim 14, further comprising viable cells, appropriate buffers, gel filtration apparatus, detectable labels and instructional material.